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10/607,269	06/27/2003	Isamu Tsumori	1403-0252P	4725

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BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER

MAKI, STEVEN D

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 03/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/607,269

Applicant(s)

TSUMORI ET AL

Examiner

Steven D. Maki

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>011905.062703</u> | 6) <input type="checkbox"/> Other: ____ |

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- 1) The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

- 2) Claims 4 and 8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In claims 4 and 8, the subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention is the *combination* of (1) the subject matter of extruding a rubber composition into a tube, forming a sheet by cutting one point in the sidewall of the tube shaped rubber sheet in the extrusion direction, cutting the sheet parallel to the extrusion direction, rotating each piece of the rubber sheet 90 degrees and laminating *and* (2) the subject matter of "said rubber composition is made into 2 mm sheets with a roller" with the equation being fulfilled.

The original disclosure describes a first process of forming a tread in which a roller is used to form a rubber composition into a sheet (figure 2) and a second process of forming a tread in which a rubber composition is formed into a tube shape (figures 3b, 4, 5). These processes are mutually exclusive. The original disclosure fails to describe how the roller embodiment (figure 2) and the tube shaped embodiment (figure 4) are used together in a process of preparing a tread satisfying the equation described at line

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15 of claim 4. It is emphasized that the fiber orientation in figure 2 is in the extrusion direction whereas the fibers are oriented perpendicular to the extrusion direction in tube shaped embodiment (figure 4). The description of claim 4 is found at page 5 line 15 to page 6 line 4 of the specification. However, this description provides no guidance as to how the roller and the equation of the roller embodiment (figure 2) are to be employed in the tube shaped embodiment (figure 4). It is suggested to cancel claims 4 and 8.

3) The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4) Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1 line 9, there is no antecedent basis for "said tube shaped rubber" and "said tube shaped rubber sheet". In claim 1, the following changes are suggested: (1) on line 8 insert --composition-- after "shaped rubber" and (2) on line 9 change "sheet" to --composition--. These changes will also clarify which "sheet" is being cut in claim 2.

In claim 2, does the cutting step form pieces and what is being laminated? In claim 2, it is suggested to (1) insert --to obtain pieces-- after "direction" (line 4) and (2) insert --the rotated pieces together-- after "laminating" (line 5).

In claim 3, does the cutting step form pieces and what is being laminated? In claim 3, it is suggested to (1) insert --to obtain pieces-- after "direction" (line 5) and (2) insert --the rotated pieces together-- after "laminating" (line 6).

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In claim 3, it is unclear how "when" affects the scope of the claim. Does the use of "when" at line 10 make the equation and hardness optional limitations? In claim 3 line 10, it is suggested to change "when" to --wherein--.

In claim 3, the relationship between the extruding step and the "step" of making 2 mm sheets with a roller is unclear. It is unclear if the roller is used in the extruding step or if the roller is used after the extruding step. In claim 3, the following changes are suggested: (1) on line 4 change "into a sheet" to --into a 2 mm sheet using a roller-- and (2) on line 11 delete --said rubber composition is made into 2 mm sheets with a roller and--.

Claims 4 and 8 are indefinite. Claim 4 describes a step of extruding the rubber composition into a tube and a step of making the rubber composition into 2 mm sheets with a roller. It is unclear how these steps are simultaneously satisfied. It is unclear how the description of "when said rubber composition is made into 2 mm sheets with a roller" affects the scope of the step of extruding the rubber composition into a tube. Does the step of making 2 mm sheets replace the step of extruding into a tube? If not, why not? Also, there is no antecedent basis for "said tube shaped rubber sheet". It is unclear if pieces rotated 90 degrees were obtained from the cutting step. It is unclear what is laminated to what. It is unclear how "when" at line 12 affects the scope of the claim. It is suggested to cancel claims 4 and 8.

Claim 9 is written in partial product by process format. In view of the incomplete description of the process used to form the tread in claim 9, the scope of the claimed tread of the claimed tire is unclear; it being emphasized that there is no antecedent

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basis for "said sheet", "the extrusion direction" and "said rubber composition". Does claim 9 require the tread to be made by the process of claim 3? If not, why not?

5) The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Japan 718 (roller embodiment)

7) **Claims 3 and 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan 718 (JP 2001-138718) in view of Japan 034 (JP 60-219034) and either Japan 842 (JP 2002-210842) or Japan 396 (JP 2001-31-396).**

With respect to Japan 842, applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Claim 3 fails to require using the tread in a studless tire.

Claims 5-8 are included in this rejection since they are product by process claim.

Japan 718, directed to a summer pneumatic tire, discloses preparing a tread for a pneumatic tire comprising extruding a rubber composition comprising diene rubber and 2-40 parts short fibers using a pair of rollers to obtain a rubber sheet having fibers

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oriented in the extrusion direction and laminating the rubber sheet such that the fibers are oriented in the thickness direction of the tread wherein during the laminating step (1) the rubber sheet is folded as shown in figure 5(a) or (2) the rubber sheet is layered and cut as indicated by figure 5(b). The short fibers may be glass fibers. The short fibers have an average diameter of 1-100 microns and an average length of 0.1-5 mm. The rubber has a hardness of 50-75 degrees, preferably 60-65. Japan 718 teaches raising the radial complex modulus E1 without raising the complex modulus of the tire circumferential direction. See paragraph 23 of the machine translation. Japan 718 does not recite rotating pieces.

As to claim 3, it would have been obvious to one of ordinary skill in the art to cut Japan 718's rubber sheet having oriented fibers therein to obtain pieces, *rotate* the pieces and laminate the rotated pieces so as to make the tread having fibers oriented in the thickness direction since Japan 034 teaches orienting fibers in the thickness direction by cutting a rubber sheet having oriented fibers therein to obtain narrow strips 5, rotating the strips 5 and laminating the rotated strips together (figures 1-4). It is noted that (1) Japan 718 illustrates cutting a layered stack (figure 5(b)) and (2) Japan 034 illustrates this procedure of cutting a sheeting, rotating and laminating as shown in figures 1-4 as being an alternative to cutting a layered stack of the rubber sheets (figures 5-6).

As to 2 mm thickness, it would have been obvious to one of ordinary skill in the art to form Japan 718's rubber sheet having oriented fibers therein with a thickness of 2 mm since (1) Japan '842, also teaching forming a rubber sheet having oriented fibers

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therein using a pair of rollers (figure 2), suggests forming the sheet with a thickness of 1-3 mm (paragraph 22 of machine translation) or (2) Japan 396, also teaching forming a rubber sheet having oriented fibers therein using a pair of rollers (figure 2), suggests forming the sheet with various thicknesses of for example 1.5 mm (paragraph 18 of machine translation)

As to claimed Moh hardness, note Japan 718's suggestion to use glass fibers; glass fibers having a Moh hardness within the claimed range due to the glass material.

As to the hardness being 45-70 degrees, note Japan 718's suggestion to use a hardness of 50-75, preferably 60-65.

As to the claimed equation, it would have been obvious to form Japan 718's tread such that the claimed equation is satisfied in view of Japan 718's teaching to form the tread such that 90% or more of the fibers are oriented in the tread thickness direction so that the complex elastic modulus E_1 in the thickness direction is increased. It is noted that when $E_1/E_\alpha = 1$, then the complex modulus in the tread thickness direction equals the complex modulus in the extrusion direction. It is also noted that as more of the fibers are oriented in the extrusion direction, the complex modulus E_α in the extrusion direction increases in comparison with the complex modulus E_β in the direction of 90 degree to the extrusion direction.

As to claims 5-10, the description of "studless tire" fails to require tire structure not suggested by Japan 718 as modified by the secondary art. See MPEP 2113. With respect to claim 5, 6 and 8 (product by process claims), it is noted that these claims fail to require a tread thickness of at most 20 mm since "for preparing a rubber sheet having

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a thickness of at most 20 mm" in the preamble of the process claim upon which these product claims depend relates to intended use and is not required by the body of the process claim.

Europe 446 (studless tire / roller embodiment)

8) Claim 5 is rejected under 35 U.S.C. 102(b) as being anticipated by Europe 446 (EP 1072446).

The claimed rubber sheet reads on the rubber sheet formed by the figure 2 process. *Claim 5 fails to exclude folding the sheet.*

9) Claim 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Europe 446 (EP 1072446).

Claims 9 and 10 fail to require cutting, rotating and laminating to form the tread.

Europe 446 discloses a studless tire having a tread wherein the tread is formed by forming a rubber sheet having oriented fibers therein and folding the rubber sheet as shown in figure 2. The fibers may be glass fibers, which have a Moh hardness within the claimed range of 7-9. The fibers have an average fiber diameter of 1-100 microns and an average length of 0.1-5 mm. The hardness of the tread rubber is 45-75 degrees. A complex modulus E1 in the thickness direction of the tread and an elastic modulus E2 in a circumferential direction of the tire satisfy $E1/E2 = 1.1$ to 4. Europe 446 teaches that the thickness of the sheet formed using the rollers is 1 mm. However, it would have been obvious to one of ordinary skill in the art to form Europe 446's rubber sheet with the rollers such that the sheet has a thickness of 2 mm since Europe 446 teaches using the rollers to orient the short fibers and provides an example thickness of

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1 mm for the rubber sheet. In other words, the optimum rubber sheet thickness could have been determined without undue experimentation in view of Europe 446's teaching to use the rollers, which determine the thickness of the rubber sheet, to orient the fibers. Furthermore, it would have been obvious to form the tread such that the claimed equation is satisfied in view of Europe 446's teaching to form the tread such that $E1/E2 = 1.1$ to 4.

10) Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Europe 446 as applied above and further in view of Japan 842 or Japan 718.

As to claims 5-8, it would have been obvious to one of ordinary skill in the art to form Europe 446's tread having fibers oriented in the thickness direction such that it comprises laminated cut pieces in view of the suggestion from either Japan 842 or Japan 396 to use cut laminated pieces (as an alternative to using a folded sheet) to obtain a tread having fibers oriented in the thickness direction.

11) Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Europe 446 in view of Japan 842 or Japan 718 and further in view of Japan 034.

As to claim 3, it would have been obvious to one of ordinary skill in the art to obtain laminated cut pieces by cutting, rotating and laminating as claimed since Japan 034 teaches orienting fibers in the thickness direction by cutting a rubber sheet having oriented fibers therein to obtain narrow strips 5, rotating the strips 5 and laminating the rotated strips together (figures 1-4).

tube shape embodiment

12) Claims 1 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goettler et al (US 4056591) in view of Tajima et al (US 5429487) and optionally Japan 718.

Goettler et al discloses extruding a rubber composition comprising rubber and short fibers into a tube shape such that the fibers are oriented in the circumferential direction. The hose may be split and laid flat to obtain a sheet having oriented fibers therein. See col. 7 lines 47-63. The fibers have an average aspect ratio of 10-3000. The fibers may be glass fibers. See col. 3 lines 38-51. The optimum amount of fibers is 15-40 parts. See col. 3 lines 52-62. In an example, rayon fibers having a diameter of 10-15 microns and a length of .125 inches (3.18 mm) is used. The hose may be cut to obtain a sheet therefrom. See figure 3.

As to claims 1 and 5, it would have been obvious to one of ordinary skill in the art to cut Goettler et al hose "at one point in sidewall in the extrusion direction to obtain a rubber sheet" since (1) Goettler et al teaches cutting the hose (tube) having the circumferentially oriented fibers to obtain a sheet therefrom and (2) Tajima et al, also directed to using extrusion to obtain circumferentially oriented fibers, suggests cutting a tube having the circumferentially oriented fibers "at one point in sidewall in the extrusion direction" into order to obtain a rubber sheet utilizing the entire tube. Furthermore, it would have been obvious to form the hose such that the rubber sheet cut therefrom has $E_b/E_a \geq 1.1$ in view of (1) Goettler's teaching to use 15-40 parts fibers such as glass fibers or rayon fibers having an aspect ratio of 10-3000 and a length for example of 3.2

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mm, (2) Goettler's teaching that during extrusion the fibers are *oriented circumferentially* and optionally (3) Japan 718's suggestion to form a rubber sheet having oriented fibers for forming a tire tread having increased complex modulus E1 using 2-40 parts nonmetal fibers (e.g. glass fibers), which have an average diameter of 1-100 microns and an average length of 0.1-5mm.

13) Claims 2, 4, 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goettler et al in view of Tajima et al and optionally Japan 718 as applied above and further in view of Japan 034.

As to claim 2, it would have been obvious to one of ordinary skill in the art to process Goettler et al's rubber sheet having oriented fibers therein by cutting, rotating and laminating as claimed in view of Japan 034's teaching to process a rubber sheet having oriented fibers therein by cutting, rotating and laminating for the benefit of obtaining a fiber reinforced rubber layer having fibers oriented in the thickness direction.

13). As to claims 4, 6, and 8, Japan 718 suggests using a fiber reinforced layer having fiber oriented in the thickness direction as a tread for a tire. As the hardness in claim 4, Japan 718 suggests a hardness of 50-75.

Remarks

14) The remaining references are of interest.

15) No claim is allowed.

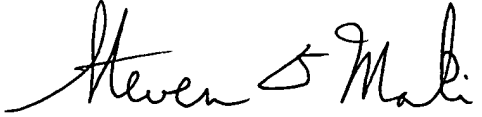
16) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven D. Maki whose telephone number is (571) 272-1221. The examiner can normally be reached on Mon. - Fri. 7:30 AM - 4:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Blaine Copenheaver can be reached on (571) 272-1156. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Steven D. Maki
March 11, 2005


STEVEN D. MAKI 3-11-05
PRIMARY EXAMINER
~~GROUP 1300~~
AV 1733